

CLAIMS

1. A process for manufacturing laminated mild steel strip, the process comprising the steps of,
- (a) cleaning the strip;
 - (b) chemically pre-treating the cleaned strip to form on one or each of its surfaces a non-metallic chemical coating of an oxyanion to resist corrosion of the underlying mild steel substrate and to promote adhesion to a subsequently applied layer; and,
 - (c) applying to the chemically-treated strip a coating of thermoplastic resin to form a protective layer on at least one surface thereof.
2. A process according to claim 1 wherein the mild steel strip is cold-rolled.
3. A process according to any one of the preceding claims wherein the strip has a gauge of between 0.08 and 0.50mm.
4. A process according to claim 3 wherein the strip has a gauge of 0.18mm.
5. A process according to any one of the preceding claims wherein the strip is cleaned electrolytically.
6. A process according to any one of the preceding claims wherein the chemical coating is applied to the strip by a method of immersion, spraying, roller coating, or a combination thereof.
7. A process according to claim 6 wherein the chemical coating is applied by immersing the strip into at least one chemical treatment vessel.
8. A process according to claim 7 wherein the residence time of the strip

in the chemical-treatment vessel is less than 60 seconds.

9. A process according to claim 8 wherein the residence time of the strip in the chemical-treatment vessel is less than 30 seconds.
10. A process according to claim 9 wherein the residence time of the strip in the chemical-treatment vessel is less than 15 seconds.
11. A process according to claim 10 wherein the residence time of the strip in the chemical-treatment vessel is less than 10 seconds.

12. A process according to any one of the preceding claims wherein the strip is chemically treated at a temperature of less than 100°C.

13. A process according to any one of the preceding claims wherein the strip is chemically treated to form an anti-corrosive, adhesion promoting chemical coating between the strip and thermoplastic resin.

14. A process according to any one of the preceding claims wherein the oxyanion coating comprises a phosphate, a chromate, an oxalate or an arsenate.

15. A process according to claim 14 wherein the chemical coating includes a two component organic polymer.

16. A process according to claim 14 wherein the chemical coating includes chromium, silicon and an organic active species.

17. A process according to claim 14 wherein the chemical coating comprises a phosphate such as zinc orthophosphates, manganese phosphates or

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iron phosphates.

~~Sub A5 18. A process according to any one of the preceding claims wherein the chemical coating comprises less than 5 atomic % chromium.~~

~~Sub A5 19. A process according to any one of the preceding claims wherein the chemically-treated strip is rinsed and/or dried prior to organic resin coating.~~

~~Sub A5 20. A process according to any one of the preceding claims wherein one or more layers of thermoplastic resin are applied to one or both sides of the chemically-treated strip.~~

~~Sub A5 21. A process according to any one of the preceding claims wherein the layer or layers of thermoplastic resin is/are melted and rapidly quenched to attain the required degree of crystalline structure.~~

~~Sub A5 22. A process according to any one of the preceding claims wherein the chemically-treated strip is extrusion coated with at least one thermoplastic resin.~~

~~23. A process according to claim 22 wherein the film of thermoplastic resin is bonded to the chemically-treated strip under conditions of elevated temperature and pressure.~~

~~Sub A5 24. A process according to any one of the preceding claims wherein the chemically-treated strip is coated with thermoplastic resin together with a bonding layer.~~

~~Sub A5 25. A process according to claim 24 wherein the bonding layer comprises a polyester or an acid or acid-anhydride polyolefin resin containing carboxyl~~

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cond or anhydride groups.

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A726. A process according to claim 24 or claim 25 wherein the thickness of the bonding layer is between 1 and 10 μm .

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A 77. A process according to any one of the preceding claims wherein the thermoplastic resin comprises polypropylene (PP), polyethyleneterephthalate (PET) or a combination thereof.

Sub A28. A process according to any one of the preceding claims wherein the thickness of the layer, or layers, of thermoplastic resin is/are between 3 and 50 μm .

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